

Structural design of energy storage flywheel





Overview

The flywheel is the main energy storage component in the flywheel energy storage system, and it can only achieve high energy storage density when rotating at high speeds. Choosing appropriate fly.

How does a flywheel energy storage system work?

The flywheel energy storage system mainly stores energy through the inertia of the high-speed rotation of the rotor. In order to fully utilize material strength to achieve higher energy storage density, rotors are increasingly operating at extremely high flange speeds.

How to improve the stability of the flywheel energy storage single machine?

In the future, the focus should be on how to improve the stability of the flywheel energy storage single machine operation and optimize the control strategy of the flywheel array. The design of composite rotors mainly optimizes the operating speed, the number of composite material wheels, and the selection of rotor materials.

How can composite flywheel materials improve energy storage density?

In addition to using multi ring sets, hybrid materials, gradient materials, and fiber pre-tensioned fiber winding are designed to improve the energy storage density. Two-dimensional or three-dimensional strengthening is another path in the design of composite flywheel materials.

How do different flywheel structures affect energy storage density?

Different flywheel structures have important effects on mass distribution, moment of inertia, structural stress and energy storage density. Under a certain mass, arranging the materials as far away as possible from the center of the shaft can effectively improve the energy storage density of the flywheel rotor per unit mass.



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